VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

The paragraph at page 3, lines 1-10 has been amended as follows:

Unfortunately, padded sliders 12P can be prone to rotate and/or tip off their pads 20P when the slider 12P comes to rest on the storage disk 14P. The predominant driving force for tipping is friction that acts during backward ~~14P~~ disk **14P** rotation, which can occur if the motor cogs, or under the influence of external rotational shock. This friction acts at the slider 12P / disk 14P interface and provides a moment that acts to tip the slider 12P off its pads 20P. Referring to Figure 1B, the tipping brings the non-padded portion of the air bearing surface 18P near the back of the slider 12P in contact with the disk 14P. Unfortunately, the contact area between slider 12P and the disk 14P and stiction increase dramatically with the slider 12P ~~is~~ in the tipped condition.

The paragraph at page 7, lines 26-31 has been amended as follows:

Referring to Figure 3, each transducer assembly 18 includes a load beam **24**~~18~~ that secures one of the head suspensions 26 to one of the actuator arms 36 (not shown in Figure 3). Each load beam **24**~~18~~ is flexible in a direction perpendicular to the storage disk 12 and acts as a spring for supporting the slider 22 and the data transducer 20. Each load beam **24**~~18~~ is resilient and biased to urge each slider 22 towards the storage surface 34.

The paragraph at page 8, lines 18-27 has been amended as follows:

The design of each slider 22 can be varied to suit the design requirements of the disk drive 10. As provided above, preferably each slider 22 is a padded slider that includes the air bearing surface 27 and at least one pad 28 which is positioned closer to the storage disk 12 than the air bearing surface **27**~~24~~ when the slider 22 is positioned near the storage disk 12. The pads 28 minimize the contact area between the slider 22 and the disk 12. The pads 28 are tall enough to prevent long-range adhesion forces and liquid meniscus forces which greatly increase the

contact load between the slider 22 and the disk 12. Stated anther way, the pads 28 reduce stiction between the slider 22 and the storage disk 12 when the slider 22 contacts the storage disk 12.

The paragraph at page 8, line 28-33 has been amended as follows:

Stated another way, the pads 28 maintain the air bearing surface **27**~~24~~ and the rest of the slider 22 spaced apart from the storage disk 12 when the slider 22 contacts the storage disk 12. A more complete discussion of suitable sliders 22 can be found in U.S. Patent No. 5,768,055, issued to Tian et al.; U.S. Patent No. 5,841,608, issued to Kasamatsu et al.; and U.S. Patent No. 5,388,017 issued to Franco et al., the contents of which are incorporated herein by reference.

The paragraph at page 9, lines 1-11 has been amended as follows:

The head suspension 26 connects the slider 22, including the data transducer 20, to the load beam **24**~~48~~. The design of the head suspension 26 can be varied to suit the design requirements of the head stack assembly 14. In the embodiment illustrated in the Figures, the head suspension 26 includes a proximal end 60, a distal end 62, a suspension gimbal 64 and a plurality of electrical traces (not shown). Figure 3 is a top plan view of a load beam 24 and a head suspension 26. Alternately, Figures 4 and 5 are simplified illustrations of the head suspension 26 and the slider 22. The proximal end 60 is secured to the load beam **24**~~48~~. The distal end 62 cantilevers away from the load beam **24**~~48~~. The gimbal 64 is positioned between the distal end 62 and the proximal end 60. The gimbal 64 allows the slider 22 and the data transducer 20 to pivot relative to the storage disk 12.

The paragraph at page 9, lines 12-25 has been amended as follows:

Importantly, referring to Figure 5, the head suspension 26 maintains the slider 22 at a pitch static attitude 29 of between approximately zero degrees and negative two degrees. If the pitch static angle 29 is negative, a moment 66 (illustrated in Figure 4) acts on the head suspension 26 when the slider 22 rests on the storage disk 12. The moment 66 inhibits the slider 22 from rotating and tipping in the event the disk 12 rotates backwards. Stated another way, when the head stack assembly 14 is loaded onto the storage disk 12, the head suspension 26 is deformed. If the pitch static attitude **29**~~66~~ is negative, **as illustrated in Figure 5,** the moment 66

acts to rotate the slider 22 counterclockwise to increase the stability of the slider 22. By maintaining the pitch static attitude **29**~~66~~ at between approximately negative two and zero degrees, the likelihood of contact between the non-padded portion of the slider 22 and the disk 12 during the start up and shut down phases is minimized. Thus, the present invention minimizes the likelihood of drive stiction failure. This extends the life of the disk drive 10 and allows for the use of polished media in disk drives.

The paragraph at page 9, lines 28-31 has been amended as follows:

Figure 6 is a graph that outlines the relationship between the stiction and pitch static attitude 29. Figure 6 illustrates that a negative pitch static attitude 29 stabilizes a typically unstable slider 22. Figure 6 also illustrates that stability increases as the pitch static attitude 29 decre~~s~~ases.

In the Claims

The claims have been amended as follows:

1. (Amended) A disk drive, comprising:

a storage disk~~ having a storage surface~~;

an actuator arm that moves relative to the storage disk;

a load beam secured to the actuator arm;

a slider **including a data transducer that exchanges information with the storage disk during data transfer operations**; and

a head suspension that secures the slider to the load beam and positions the slider near the storage disk, the head suspension maintaining the slider pitch at a pitch static attitude of less than ~~approximately~~ zero degrees **during the data transfer operations, wherein stiction between the slider and the storage disk is substantially less than if the pitch static attitude was greater than zero degrees during the data transfer operations.**

2. (Amended) The disk drive of claim 1 wherein the head suspension maintains the slider at a pitch static attitude of between ~~approximately~~ zero and **approximately** negative two degrees.

6. (Amended) The disk drive of claim 1 wherein the slider is a padded slider that includes an air bearing surface and at least one pad that extends below the air bearing surface **and contacts the storage disk when the stiction occurs**.

8. (Amended) A transducer assembly for a disk drive, the disk drive including a storage disk and an actuator arm, the transducer assembly comprising:

a slider including a data transducer **that exchanges information with the storage disk during data transfer operations**;

a load beam that attaches to the actuator arm; and

a head suspension that secures the slider to the load beam and positions the slider near the storage disk, the head suspension maintaining the slider pitch at a pitch static attitude of less than ~~approximately~~ zero degrees **during the data transfer operations, wherein stiction between the slider and the storage disk is substantially less than if the pitch static attitude was greater than zero degrees during the data transfer operations**.

9. (Amended) The transducer assembly of claim 8 wherein the head suspension maintains the slider at a pitch static attitude of between ~~approximately~~ zero and **approximately** negative two degrees.

11. (Amended) The transducer assembly of claim **8**~~9~~ wherein the head suspension maintains the slider at a pitch static attitude of approximately negative two degrees.

14. (Amended) A method of making a disk drive, the method comprising the steps of:

providing a storage disk ~~having a storage surface~~;

providing an actuator arm that moves relative to the storage disk;

providing a slider including a data transducer **that exchanges information with the storage disk during data transfer operations**;

securing a load beam to the actuator arm; and

securing the slider to the load beam with a head suspension, the head suspension maintaining the slider pitch at a pitch static attitude of less than ~~approximately~~ zero degrees **during the data transfer operations, wherein stiction between the slider and the storage disk is substantially less than if the pitch static attitude was greater than zero degrees during the data transfer operations**.

15. (Amended) The method of claim 14 wherein the head suspension maintains the slider at a pitch static attitude of between ~~approximately~~ zero and **approximately** negative two degrees.

19. (Amended) The method of claim 14 wherein the step of providing a slider includes providing a padded slider that includes an air bearing surface and at least one pad that extends below the air bearing **surface and contacts the storage disk when the stiction occurs**.

Claims 20-40 have been added.

REMARKS

Claims 1-40 are pending. In this Response, claims 1, 2, 6, 8, 9, 11, 14, 15 and 19 have been amended, and claims 20-40 have been added.

I. SECTION 102 REJECTIONS – ARYA ET AL.

Claims 1-3, 5, 8-10 and 12-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Arya et al.* (U.S. Patent 5,739,982).

Claims 1, 8 and 14 have been amended to recite "the head suspension maintaining the slider pitch at a pitch static attitude of less than zero degrees during the data transfer operations, wherein stiction between the slider and the storage disk is substantially less than if the pitch static attitude was greater than zero degrees during the data transfer operations."

Arya et al. fails to teach or suggest this approach.

Under 35 U.S.C. §102, anticipation requires that each and every element of the claimed invention be disclosed in the prior art. *Akzo N.V. v. United States International Trade Commission*, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909 (1987). That is, the reference must teach every aspect of the claimed invention. M.P.E.P. § 706.02.

Therefore, Applicant respectfully requests that these rejections be withdrawn.

II. SECTION 103 REJECTIONS– ARYA ET AL.

Claims 4 and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Arya et al.*

Applicant respectfully submits that these rejections are moot for the reasons mentioned above.

III. SECTION 103 REJECTIONS– ARYA ET AL. AND JACQUES

Claims 6 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Arya et al.* in view of *Jacques* (U.S. Patent 5,612,839).

Applicant respectfully submits that these rejections are moot for the reasons mentioned above.

IV. SECTION 103 REJECTION– ARYA ET AL. AND BATTU ET AL.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Arya et al.* in view of *Battu et al.* (U.S. Patent 5,841,610).

Applicant respectfully submits that this rejection is moot for the reasons mentioned above.

V. NEW CLAIMS

Claims 20-40 have been added to further clarify and explicate various features of the invention. No new matter has been added.

Claim 20 recites "the slider has a pitch static attitude of less than zero degrees during the data transfer operations, and stiction between the slider and the storage disk is substantially less than if the pitch static attitude was zero degrees during the data transfer operations." *Arya et al.* fails to teach or suggest this approach.

Claim 31 recites "a slider including a data transducer, an air bearing surface and a plurality of pads, wherein the data transducer exchanges information with the storage disk during data transfer operations, the pads extend from the air bearing surface towards the storage disk, the slider has a pitch static attitude of less than zero degrees during the data transfer operations, stiction between the slider and the storage disk is substantially less than if the pitch static attitude was zero degrees during the data transfer operations, and the pads contact the storage disk when the stiction occurs." *Arya et al.* fails to teach or suggest this approach.